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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,511	03/18/2005	Kazushi Tanaka	02157/0202701-US0	4354
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DARBY & DARBY P.C. P.O. BOX 770 Church Street Station New York, NY 10008-0770			EXAMINER BERMAN, JACK I	
			ART UNIT 2881	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/528,511

Applicant(s)

TANAKA ET AL.

Examiner

Jack I. Berman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-15, 17-19 and 21-26 is/are rejected.
- 7) ☒ Claim(s) 5, 16 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 3/18/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Honjo et al. (Japanese Unexamined Application 2000-011464). Honjo et al. discloses an electron beam irradiation apparatus comprising: a rotary driving unit (11) for rotationally driving a disc-shaped object (10); a shield container (illustrated in Fig. 1 but not labeled) for rotatably accommodating the disc-shaped object; and an electron beam irradiation unit (1) provided in said shield container so that a face to be irradiated on the surface of the disc-shaped object is irradiated with electron beams (3), wherein when the face to be irradiated is irradiated with the electron beams emitted from said electron beam irradiation unit during rotations of the disc-shaped object, an irradiation beam intensity of the electron beams is set larger on the side of an outer peripheral surface in a radial direction of the disc-shaped object than on the side of an inner peripheral surface. (See the second to the last sentence in the abstract.)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 13, 14, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. The acceleration voltage of the electron beam irradiation unit would be a matter for routine experimentation that a person having ordinary skill in the art would routinely adjust in dependence on the effect on the object being irradiated. Although Honjo et al. does not mention a "vacuumizing" device for depressurizing the interior of the shield container or the composition of the shield structure, it is well known that electron beams interact with molecules of any atmosphere they pass through and interact with the atoms of the object they irradiate to produce dangerous x-rays, so it is standard practice in the art to evacuate a container that contains an object to be irradiated and to make the container of a metallic material that is capable of shielding the electron beam emitted from the window so that no dangerous radiation escapes from the container. It would therefore have been obvious to a person having ordinary skill in the art to provide a device for depressurizing the interior of the container and to make the container with a shielding structure, even if Honjo et al. does not inherently provide these features. It would also have been obvious to a person having ordinary skill in the art to make the container openable/closable in order to insert or remove the object to be irradiated.

Claims 3, 4, 7, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. in view of Teguri et al. (Japanese Unexamined Application No. 11-296916). While

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Honjo et al. teaches to irradiate the surface of a rotating disc-shaped object with an electron beam by translating the rotating stage that supports the object beneath the electron beam, Teguri et al. teaches that this same irradiation of the entire surface of a rotating disc-shaped object by providing a plurality of electron beam irradiation tubes arranged substantially in the same direction along the radial direction. The use of such a plurality of electron beam irradiation tubes instead of the single tube and translating stage used by Honjo et al. would therefore have been an obvious substitution of known equivalents. In making such a substitution, it would have been obvious to a person having ordinary skill in the art that incorporating Honjo et al.'s teaching of increasing the electron beam current as the distance of the point of incidence of the beam from the center of the object increases into a system using Teguri et al.'s plurality of electron tubes would require that the current values of the electron tube disposed nearer the outer edge of the surface of the object be larger than the current value of a tube disposed over an inner part of the surface.

Claims 6, 8, 9, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. and Teguri et al. as applied to claims 3, 4, 7, and 19 above, and further in view of Miyamoto et al. (Japanese Unexamined Application No. 2001-307385). While Teguri et al. arranges the plurality of electron beam irradiation tubes in substantially the same direction, Miyamoto et al. teaches that the points of incidence of a plurality of such tubes may be brought closer together by inclining them. It would have been obvious to a person having ordinary skill in the art to incline the tubes in the Honjo et al./Teguri et al. apparatus discussed above in order to increase the uniformity of the irradiation of the surface since there would be less space between the points on the surface that are irradiated by electrons.

Claims 10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et. in view of Takeda et al. (Japanese Unexamined Application No. 11-288529). Takeda et al. discloses an electron beam irradiation apparatus similar to Honjo et al.'s and teaches that the productivity of such an apparatus can be improved by replacing an interior of the shield container with an inert gas atmosphere by introducing an inert gas into the interior of the shield container. It would have been obvious to a person having ordinary skill in the art to provide Takeda et al.'s inert gas flow system in the Honjo et al. apparatus in order to achieve the improved productivity discussed by Takeda et al.

Claims 11, 12, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. and Takeda et al. as applied to claims 10 and 23 above, and further in view of Novotny et al. (U. S. Patent No. 4,143,468). While Takeda et al. teaches to flow an inert gas into a shield container of an electron beam irradiation apparatus of the type disclosed by Honjo et al., Novotny et al. teaches, at lines 3-17 in column 8, that such a flow of inert gas can be introduced in the vicinity of an electron beam irradiation unit to perform the dual function of excluding oxygen from the atmosphere around the surface being irradiated and to control the temperature of the electron beam irradiation unit, thereby improving the economics of the apparatus by eliminating the need for a second flow of gas. It would have been obvious to a person having ordinary skill in the art to apply the teachings of Novotny et al. to the Honjo et al./Takeda et al. apparatus discussed above in order to achieve the economy taught by Novotny et al. When the inert gas is used as a cooling gas in this way, it would also have been obvious to a person having ordinary skill in the art to provide a temperature sensor in the vicinity of the electron beam irradiation unit in order to verify that the unit was being sufficiently cooled and to adjust the flow

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rate of the inert gas based on this measured temperature. Novotny et al. also mentions, at lines 3-7 in column 11, taking samples of the atmosphere in the inert atmosphere chamber in order to measure the oxygen concentration therein and it would have been obvious to a person having ordinary skill in the art to provide an oxygen concentration meter to measure the oxygen concentration on a constant basis so that it could be better controlled.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. in view of Swartz (U. S. Patent No. 3,916,204). While Honjo et al. uses a beam blanking system, blanking electrode (5) and drawing hole (7) in throttle plate (6) as illustrated in Drawings 3 and 4, to permit or block transmission of the electron beam, Swartz teaches that the same function can be achieved by means of shutters (61). The use of a shutter of the type disclosed by Swartz in the Honjo et al. system to permit or block transmission of the electron beam would therefore have been an obvious substitution of equivalent parts.

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. in view of Mayer et al. (U. S. Patent No. 4,522,846). While the Honjo et al. electron beam irradiation apparatus is disclosed as being used to form pits on an optical master disk, Mayer et al. teaches at lines 45-48 in column 30 that an electron beam can be used to cure a surface layer on a disc-shaped object. It would therefore have been obvious to a person having ordinary skill in the art to use the Honjo et al. electron beam irradiation apparatus as the unspecified means required by Mayer et al. to irradiate a disc-shaped object in order to cure a surface layer on the object.

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Claims 5, 16, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach to provide an electron beam irradiation apparatus for irradiating a rotating disc-shaped object with a plurality of electron beam irradiation tubes arranged so that a distance from the face to be irradiated to said irradiation window is shorter in said electron beam irradiation tube on the side of the outer peripheral surface than a distance in said electron beam irradiation tube on the side of the inner peripheral surface, or with a shutter member constructed to open and close at a higher speed than a peripheral speed on the outer periphery of the disc-shaped.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Huemmer discusses the effect of oxygen on electron beam curing. Usami et al. has some of the same inventors as the instant invention and is directed to similar but distinct technology.

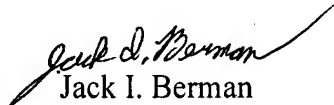
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack I. Berman whose telephone number is (571) 272-2468. The examiner can normally be reached on Monday-Thursday (8:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jack I. Berman  
Primary Examiner  
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jb  
5/10/07